Dear Alumni & Friends of the Chemistry Department:

A NOther Year has PasSEd and our annual newsletter once again provides us with an opportunity to stay in touch with our many alumni and friends. As I take over Chair responsibilities for 2015-16, I am happy to report the Chemistry Department at Franklin & Marshall continues to be an exciting and dynamic place. First, I’d like to thank Jennifer Morford for her outstanding service as Chair for the past four years. I know the hard work and many sacrifices that go into keeping this operation running smoothly, and we all have the greatest admiration for the wonderful job she did.

Last year was an amazing one for F&M Chemistry. Highlights include four of our current faculty earning prestigious national recognition for teaching and research (page 3). Not many departments can boast even one award winner, and we have four (five including our professor emeritus)! Congratulations to Kate, Phyllis, Scott, Rick and Jim. Our graduates continue to find great success post F&M (page 18), and the faculty remain highly productive. Last summer, 48 students were on campus engaged in collaborative research with the faculty, truly learning by doing as is the F&M way. Our Department’s excellence is really a team effort, and I’d also like to thank Julie Gemmell, Lisa Mertzman, and Beth Buckwalter for their continued efforts in support of students and faculty of Chemistry. They are integral parts of the team. I’d also like to thank all of the alumni support we have received which also contributes immensely to the great work at F&M.

In my research lab, the collaboration with Ed Fenlon, Scott Brewer, and the Clinic for Special Children continued as we made significant progress toward the complete and cost effective synthesis of the ganglioside GM3. We have now worked through a complete synthesis (twice), and are working to refine our methods. During the academic year, Clare Wirth ’16 (CHM390) and Carlton Christie ’15 (CHM490) pushed the project forward immeasurably, while Katherine Kistler ’17 and Shawn Hines ’16 worked diligently over the summer. This cooperative effort would not be possible without our excellent, dedicated students and my generous, supportive colleagues. Katie Egan ’15 also completed a CHM390 project where she integrated her knowledge and interests in Classics and Archeology. She developed an LC-MS method which she used to analyze fatty acid residues from of Etruscan pottery collected by Professor Steiner from the Poggio Colla, Italy field site. Our 12 year-old Agilent LC-MS system is still going strong, but as of July 1 service and parts would no longer be guaranteed, so part of my spring sabbatical was devoted to acquiring our new LC-MS system (see page 23). I’m also continuing to work with the Miami STEM Posse program to coordinate the summer immersion program and Pre-Collegiate Training sessions. My Scholars from Miami STEM Posse 1 are all now seniors and poised to graduate, moving on to the next chapter of their lives. All in all, it was a very productive year.

Julie and the family continue to do well, with life still devoted to hockey. Cooper is a senior playing his final year with the Lancaster Firebirds Midget B team, Jessie plays ice hockey with the Princeton Tiger Lilies U16 Tier 1 girls program, and both play for the Warwick high school team.

I again hope all is well in your lives and careers, and please feel free to drop us a line to keep in touch.

Ken Hess,
Chair and Professor
ken.hess@fandm.edu • 717-291-4124

Faculty Awards

• ACS Women Chemists Committee’s Rising Star Award
• Research Corporation’s Cottrell Scholar
• ACS Middle Atlantic Region’s E. Emmet Reid Award in Chemistry Teaching at Small Colleges
• Camille & Henry Dreyfus Foundation’s Henry Dreyfus Teacher-Scholar Award
• Research Corporation’s Cottrell Scholar
• ACS Northeast Section’s James Flack Norris Award for Outstanding Achievement in the Teaching of Chemistry
**Faculty news**

**During the Academic Year**, Emily Christie ’15 did an Independent Study (CHM490) on the structure of molybdate complexes of alpha-hydroxy carboxylic acids as part of our collaboration with Jennifer Morford, while Max Havlusč ’16 and Linh Tran ’16 were engaged in their one-semester Independent Study projects (CHM390) on the synthesis of vanadateapatites and sulfate substitution inapatites, respectively. During the summer, Max and Linh were joined by Molly Carney ’17 and Melissa Bollmeyer ’18, both of whom are also studying substitution of divalent anions in the apatites structure. Our Moore–Schaeffer Mentee this past summer was Robyn Dudrick ’19.

Our FeM Scientist interview this year will be of Judy White ’73, one of our first female Chemistry majors who has done excellent work in biochemical virology. If you are interested in a submission to the journal, please contact me.

Finally, thanks to our many alumni who have contributed to the Department and/or to the Snavely, Suydam, or Yoder student research funds. Your help is invaluable and allows us to continue to support the many students (see page 12) who are interested in doing research with our 14 faculty members.

**The Leber Group consists** of three returning members from the summer of 2014—Don Viray ’16, Josh Berrios ’16, and Katie Kidder ’18. Anna Hess ’19, a Moore–Schaeffer student, has joined our group for the month of July. Each is making considerable progress on a project that will result in publication. Attending a Gordon Research Conference the third week of June afforded me the opportunity to share some of our unpublished results with other physical organic chemists. Notification that I have received an ACS Petroleum Research Fund award has also provided much-needed extramural support for our research.

On the home front, I can report that Carolyn was married on October 31, 2015. As you can presume from the date, she is a big Halloween fan, but don’t expect there to be masks and costumes at the ceremony.

**During the Last Year** I had two research students, Jen and Colleen, both of whom presented the results of their research projects at the national meeting of the American Chemical Society in Boston. I am currently a member of the ACS Organic Chemistry Examination Committee that is preparing the 2016 examination, and I am serving as a Visiting Associate for the ACS Committee on Professional Training. This spring semester I will once again be teaching the Physical Organic Chemistry course for senior majors and a new organic photochemistry course as an elective. I continue to be a member of the Board of the North Museum.

**The Past Year was filled** with many exciting events. First, with Scott Brewer on leave, I got to teach the entire physical chemistry sequence! It had been several years since I had last taught CHM321, and I enjoyed thinking in detail about thermodynamics again. In December, I traveled to India as an invited speaker at the International Conference on Education in Chemistry in Mumbai. In addition to this event, I also presented workshops at the Homi Bhabha Centre for Science Education in Mumbai, and at universities in Pune and Hyderabad. Drew Meyer, invited me to give a presentation about POGIL in the Frontiers in Chemistry series at Case Western Reserve University in April. Later that month, I traveled to the United States Military Academy to give an Introduction to POGIL workshop and provide some advice and support to the chemistry department as they planned to implement POGIL in the first year chemistry courses. Finally, I was thrilled to learn about the two awards that will be receiving in the coming months related to chemistry education. It is very gratifying to have The POGIL Project recognized for the good work that everyone associated with the effort has accomplished. I am now on sabbatical leave for the year at the Center for Integrative Research on Cognition, Learning, and Education at Washington University in St. Louis.

**Although this Past Year** I had no CHM490, students this past summer saw significant progress in our study of transfer hydrogenation from Hantzsch-type dihydropyridines. Any day now we should have a manuscript finished for submission. Shuping Deng ’16 continued work on this project this past summer and will continue in the spring of 2016 with a CHM390, while Ian Murray ’16 will be doing a CHM490. Both Shuping and Ian are working on potential alkyl transfer reactions from the Hantzsch-type pyridines.

This year I am out of the first semester of the organic chemistry sequence and about 40 sad sacks will have to suffer the same punishment, that some of you did in the past, in the first semester of the general chemistry sequence. Actually it will be a lot of fun and I always learn something.
At home, Susan and I now have two teenagers (one who drives). We have spent many hours these past few months visiting colleges as part of driving practice and just getting a jump on the process. Late breaking news...We survived a direct hit by a tornado on our house. True story.

On July 1st, I transitioned out of the Chair’s office. I am thankful for my wonderful colleagues in the Department who made the time pass quickly and easily. This past year, I taught Chemical Analysis, including our new lab on ancient Roman Coins using SEM/EDX, and General Chemistry. I also collaborated with three wonderful research students—Carla Freund ’15, Lydia Olson ’15 and Marisa Sobel ’15. Carla and Marisa continued work on experimental lab studies to better understand the interactions of molybdenum with a simple mineral, pyrite, in the presence of organic molecules. Their contributions were critical for invited seminars that I gave at Lebanon Valley College and SUNY Stony Brook and for my recent poster presentation at the Chemical Oceanography Gordon Conference. Lydia spent her senior year focusing on the sediment samples that we recovered from the Chesapeake Bay during Summer 2014. In addition, two papers were published this past year, one in collaboration with Dr. David Hastings at Eckerd College on the effects of the Deep Water Horizon oil spill in the Gulf of Mexico, and another with Ken Hess and my previous research student, Ryan Brenner ’16, for a lab experiment for Chemical Analysis. Ryan collected the data for this paper during the summer before his first year at F&M as a Moore–Schaeffer student. I am looking forward to being on sabbatical during the Spring 2016 semester. I will be staying in Lancaster and diving into the lab to continue my research on molybdenum.

At home, Gregory had a successful 6th grade where he enjoyed coding and computers. Benjamin loved kindergarten and was reading whenever he wasn’t playing with Legos. Theresa is a very opinionated two-year old, and alternates between her fancy dresses and her brother’s Iron Man shirt. Our quintet is happy and healthy, and we wish the same to you and yours.

During 2014–15 I taught organic chemistry in the fall and a Connections (CNX) course entitled Mars & Venus on The Pill (MVP) in the spring. F&M recently transitioned from our Foundations (FND) curriculum to the new Connection curriculum where every student takes two writing intensive CNX seminars. I converted my Pills, Pills, Pills FND course into the MVP CNX seminar. Briana Krewson (BFB ’17) served as the preceptor and helped tremendously with the planning and teaching of the course.

Last summer Kelsey Michenko ’16 continued work on the synthesis of stable hydrocarbon radicals for use in an NMR technique known as dynamic nuclear polarization (DNP). We are now focused on tetrabenzofluorene radicals and Kelsey made excellent progress on improving and scaling up our synthesis. We have plans to collaborate with MIT and a startup company called DyNuPol to test the DNP abilities of our radicals.

Dan Levin ’16 continued working on the probes project synthesizing two deoxyadenosine and two phenylalanine (Phe) derivatives containing SCN or Se-CN groups to serve as IR probes. This research involves collaboration with Scott Brewer and Matthew Tucker at U. Nevada, Reno. We plan to submit a manuscript on this work soon.

Elise Tookmanian ’16 continued her work with Scott Brewer, Christine Piro and I on the synthesis and incorporation of various azide derivatives of Phe into GFP. In January her work was published in RSC Advances and we are currently working on a second manuscript from her projects. Elise is off to graduate school at Caltech.

During 2014–15 I finished my three-year term on the Professional Standards (rank and tenure) Committee. The workload was especially high but it was thoroughly enjoyable working with the exceptional colleagues on the committee and learning so much about the outstanding teaching and scholarship taking place on campus.

Ethan completed his second year of high school and was involved in many activities including playing the alto sax in marching band, jazz band, pit orchestra, and county band. He has started to consider colleges and over the summer we visited several. Stephanie ’89 continues her freelance copyeditor work for several journals at Wiley-VCH in Weinheim, Germany.

The research continues to primarily focus on the development of vibrational reporters of local protein structure and dynamics. The research during this past year resulted in a RSC Advances article (Tookmanian, E. M.; Fenlon, E. E.; Brewer, S. H. Synthesis and Protein Incorporation of Azido-Modified Unnatural Amino Acids. RSC Advances, 2015, 5, 1274–1281.), which focused on the development of new vibrational reporter unnatural amino acids (UAA). These new UAA were designed to serve as a molecular hydration ruler to probe protein hydration with high spatial and temporal resolution.

Ed Fenlon, Christine Phillips-Piro and I collaborated on the development
of a new azido-modified vibrational reporter UAA, Ed and I collaborated on the synthesis and characterization of nucleosides modified with vibrational reporters including thiocyanates and selenocyanates, and Christine and I collaborated on the elucidation of the structural impact of UAA incorporation into proteins in addition to probing the ability of UAA to modify the optical properties of the green fluorescent protein.

Ken Hess, Ed Fenlon and I continued to collaborate to develop a cost-effective, efficient, and scalable synthesis of the ganglioside GM3 to treat Amish children suffering from GM3 Synthase Deficiency. The group was able to synthesize GM3 for the first time this summer!

Numerous students worked on these projects including Elise Tookmanian ‘15, Gregory Olenginski ‘15, Łukasz Olenginski (BMB ‘15), Carlton Christie (BFB: Neurosci ‘15), Shawn Hines (BMB ‘16), Daniel Levin ‘16, Nicole Maurici (BMB ‘16), Jordan Alter ‘16, Daniyal Tariq (BMB ‘16), Katherine Kistler (BMB ‘17), Jacqueline Penn (Econ ‘17), Caroline Kearney ‘17, and Jessie Shi ‘17.

Academic Year 2014–15 was busy and exciting! I got to teach the second semester of general chemistry for the first time this year. Who knew it would be so enlightening? I gained a great perspective on the incremental intellectual growth that occurs as students progress through chemistry courses and on how our courses build. I did this on top of teaching an Inorganic Chemistry laboratory section and Materials Chemistry as a tutorial. The tutorial class was a new experience; I met once a week with two engaged senior students and discussed advanced topics in alternative energy, solid state chemistry and the current literature.

Research involved a bunch of hard-working students this year. Alex Kim ‘16, Marshall Tomat ‘16, and Jenny Georgieva ‘16 made great progress this academic year research investigating the surface chemistry and film formation by copper sulfide nanoparticles. Marshall and Jenny were joined in the lab this summer by Zihan Li ‘17, Ryan Kozloski ‘17, and Jack Kupsky ‘17. Each of these new students has done an outstanding job at picking up and independently progressing a new project related to understanding how to control the atomic arrangement in nanoparticles or take advantage of the properties afforded by different arrangements. I am proud that two research students, David Mix ‘17 and Alex Kim ‘16 were accepted to the University of Pennsylvania’s Summer Undergraduate Internship Program in Translational and Clinical Research this summer.

This academic year I received some gratifying honors (see page 3) and had numerous travel opportunities. I was invited to speak at the Rising Star Fall American Chemical Society meeting this spring. I also attended the Scialog Conference on Solar Energy Conversion, the American Vacuum Society meeting, and the IONIC VIPER Workshop on Heterogeneous Catalysis. We also received funding through the Pennsylvania State University Materials Characterization Laboratory’s Materials Research Facilities Network to use their instrumentation, including their atomic resolution transmission electron microscope. These experiences have me excited to focus on research all next year during my sabbatical!
Beyond these walls...

Our chemistry majors wandered around the globe to study abroad, take their samples to off site laboratories, or intern for the summer.

**Abhijai Mathur '17** spent the summer with the NGO Earth Train deep in the Panama primary rainforests, doing a mixture of physical labor along with some research and shadow experience with American/Panamanian biologists cataloging different species in the Mamoni river valley. Photo: Mathur, right, with a Panamanian Farmer.

**Jen Ligeot '16** taking a break from her studies at the University of South Wales in Sydney, Australia for a home stay with a farming family in the countryside. Studying abroad did not take away from her demanding Chemistry requirements since she was able to take and get credit for her Inorganic Chemistry course.

**Trip to APS**, at the Argonne Laboratory in Illinois, April 2015. Luk Olenginski '15, Elise Tookmanian '15, Prof. Phillips-Piro, Prof. Brewer, and Greg Olenginski '15. Jen Morford’s student researcher, Ben Guttentag '16 also traveled to the Argonne Lab to complete some research this past summer.

**IDRI Summer 2015**: Shomith Mondal '17 (left) with fellow interns at the Infectious Disease Research Institute, Seattle, WA.

**Jen Liegeot '16** taking a break from her studies at the University of South Wales in Sydney, Australia for a home stay with a farming family in the countryside. Studying abroad did not take away from her demanding Chemistry requirements since she was able to take and get credit for her Inorganic Chemistry course.

**Lydia Olson '15** (CHM minor) traveled to the Univ. of Southern Florida, St. Petersburg, with her sediment samples from the Chesapeake Bay, to work in the College of Marine Sciences’ ICP-MS lab. See Prof. Morford’s message for details about this project.

**Alex Kim '16** (2nd from left in back) and Dave Mix '17 (Far right in back) spent the summer at University of PA’s Institute for Translational Medicine and Therapeutics. Read about their experiences at: http://www.itmat.upenn.edu/suipstudentdavemix.html and http://www.itmat.upenn.edu/SUIPStudentAlexKim.html

This coming year, I’ll teach two new (to me, anyway) classes, Intro Biochemistry and Gen Chem II. On the research front, Alex Lieber (BMB ’15) and Min Hong (Bio ’15) represented F&M on the national stage, at the annual meeting of the Biophysical Society in Baltimore. They presented data they collected with Matt Hamilton ’15 on inhibitors of a class of kinase enzymes secreted by malaria parasites. Over the summer, Ben Lin (BMB ’17), Lingyin Xu (Bio ’17), Dennis Winston ’17 and I expanded this research. Ben Lin also made use of his funding as a Marshall Scholar to visit the Johns Hopkins

more faculty news page 15
Several of the Chemistry research groups gather for an afternoon of mini-golf.

The Summer of 2015 was a banner year for Chemistry research. We not only had the largest number of F&M Hackman scholars on campus, but we had a record year of student researchers with 48 students! More details are found on the inside back cover.

Typically, students are working with one professor during the summer, however, this year, the lines were blurred between four groups of researchers—Scott Brewer, Ed Fenlon, Ken Hess, and Christine Phillips-Piro—who shared their resources and students to work with various projects that they are collaborating on. The third and fourth floor hallways saw a lot of coming and going between these labs as well as off campus journeys for work and play.
Student Poster Presentations

As well as presenting their findings at several on campus academic fairs, Chemistry research students traveled with their mentors to many states and conferences to share their work. [Chemistry majors are underlined, Faculty mentors are in Bold.]

59th National Biophysical Society Meeting, Baltimore, MD, February 2015:

Students who traveled to the BioPhysical Society Meeting in Baltimore in February, 2015. From left: Min Hong, Elise Tookmanian, Greg Olenginski, Alex Lieber, Luk Olenginski, Nicole Maurici, and Wint Khant (Kevin) Khine.

Hong, M.; Lieber, A., Hamilton, M.; Brandt, G. Probing ATP binding sites in a family of kinases from a malaria parasite.

Maurici, N.; Dippel, A. B.; Liskov, M. T.; Brewer, S. H.; Phillips-Piro, C. M. Probing Structural Implications of Unnatural Amino Acid Incorporation into Green Fluorescent Protein.


249th ACS National Conference. Denver, CO, March 2015:

Sun, H.; Moog, R. S. Determination of the hydrogen bond effect on nitrile vibrational energy using the Kamlet-Taft solvatochromic model.

Intercollegiate Students Chemists Convention, Muhlenberg College, April 2015:

Freund, C. The Effect of 2-Mercaptoproprionic Acid on Molybdenum Adsorption onto Pyrite. (Presentation)

Olson, L. Comparison of analytical methods for the determination of trace metals in estuarine sediments. (Presentation)

250th ACS National Conference. Boston, MA, August 2015:


Liegert, J. P.; Thomsen, M. W. Solvents Effects on Electrophilic Aromatic Bromination of Anilides.

Faculty news (continued from page 10)

Malaria Research Institute, in order to treat malaria parasites in human blood culture with some of the compounds we’ve identified as inhibitors. On the synthetic side, Taylor Hughes ’15 was able to synthesize a novel compound that we plan to use to control Src kinase activity with light. Current student Chris Yodgodzinski (BMB ’16) is extending her results, synthesizing some additional compounds and carrying out photochemical and biochemical characterization of these molecules. Former research students Min, Alex, Taylor, and Matt move on. Min has taken a position at OriGene, a market leader in building the interface between human genomics and the research community. Alex and Matt are working and preparing for their medical school applications, and in the fall Taylor will begin Case Western’s Ph.D. program in pharmacology, consistently ranked among the top pharmacology programs by the National Research Council.

Visiting Faculty news

This past year, my first at F&M, has been a great experience. I thoroughly enjoyed teaching CHM111, 112, and 211, and getting to know the students. I am also very excited for both of my upcoming sections of CHM211 in the fall and hopefully CHM212 next spring for my second year here.

This past spring I got the wheels moving on the research front with the help of Cameron Rutledge ’16 and Ilia Kevlishvili ’16 who both undertook CHM390 projects on the synthesis of substituted adenine and guanine derivatives as anti-fungal agents. Ilia continued his work with me this summer building a small library of guanine and deaza-guanine derivatives to mimic the binding of folate into B12-independent methionine synthase. James Mullman (BMB ’17) also joined the research team this summer working with an adenine scaffold as an inhibitor model. James has also worked tirelessly on the scalable synthesis of polyglutamated 5-methyl-tetrahydrofolate, a necessary substrate for our enzyme of interest. Finally, with the greatly appreciated help from Gabriel Brandt and Christine Phillips-Piro, our lab has successfully expressed and purified B12-independent methionine synthase.

Three new Visiting Professors joined us this fall to accommodate the sabbaticals and leaves during the 2015/2016 academic year:

Alex Davis, will be teaching Physical and General Chemistry. He received his B.S. and Ph.D. (2011) from Purdue University and his M.S. from University
of Western Australia. Davis specializes in Environmental Chemistry.

**Alec Brown**, will be teaching General and Organic Chemistry. He just finished his Ph.D. from Boston College this past spring with an emphasis in Organic and Organometallic Chemistry. Brown received his B.S. from Juanita College.

**Maria Carroll**, will be teaching General Chemistry. She just completed a Post-Doc at the University of Pennsylvania. Carroll received her B.A. from Drew University and her Ph.D. (2013) from the University of Illinois in Inorganic Chemistry.

**Faculty Publications & Grants**
(F&M Faculty authors are in **bold**. F&M student co-authors are *underlined.*)


**Hofmann, Amy.** Tracing physical and chemical processes in geologic systems through an experimental investigation into jarosite synthesis with applications to Martian mineralogy. *The American Philosophical Society’s Franklin Research Grant.*

**Leber, Phyllis A.** The Use of a Cyclopropylcarbinyl Radical Rearrangement as a Singlet Diradical Probe. *American Chemical Society’s Petroleum Research Fund Grant.*

**Seminar Speakers**

**Amie Boal**, Ph.D. (Penn State): "Lighting the pilot light with manganese and iron: A structural view of metalloc cofactor assembly in class I ribonucleotide reductase."

**Amanda Grannas**, Ph.D. (Villanova Univ.): "Snow and Ice Photochemistry: Are we in the dark?"


**In the News**

**Two fairly recent studies** that may be of interest: The Brookings Institute has done a “value-added” study for educational institutions. F&M ranks high in Earnings, Occupational Earnings, and Loan Repayment. See http://lancasteronline.com/business/local_business/brookings-institution-study-rates-schools-by-how-much-they-boost/article_1f600842-f1bd-11e4-9a2c-0300f250e65.html.

The second study, done by Gallup and Purdue, provides the interesting conclusion that where you go to college is secondary to the experiences that you have in college in forming the values and benefits gained from college. According to the study, "Only 14% of graduates strongly agree they were supported by professors who cared, made them excited about learning, and encouraged their dreams. Further, just 6% of graduates strongly agree they had a meaningful internship or job, worked on a longterm project, and were actively involved in extra-curricular activities.” The Chemistry department at F&M believes that this type of support and experiences are provided particularly by student research. See http://www.luminafoundation.org/files/resources/galluppurdueindex-report-2014.pdf.
Congratulations Class of 2015

Class of ’15 Honors & Awards

Chemistry Department awards are marked with an asterisk *

Bradley Bailey
Graduated cum laude

Ryan Brenner
*W.E. Weisgerber Chemistry Award; Pi Mu Epsilon Mathematics Honor Society

Matthew Hamilton
Benjamin Rush Honor Society

Wint Khant "Kevin" Khine
Graduated magna cum laude; *Willig Pentathlon Chemistry Prize (co-winner); *American Chemical Society, Division of Organic Chemistry Award; Phi Beta Kappa Honor Society; Benjamin Rush Honor Society

Joseph Mohrbacher
Graduated cum laude

Gregory Olenginski
Graduated summa cum laude; *American Chemical Society Southeastern Pennsylvania Section Award; Phi Beta Kappa Honor Society; Benjamin Rush Honor Society; Black Pyramid Honor; Pi Mu Epsilon Mathematics Honor Society

Marisa Sobel
Graduated cum laude

Hanyu "Peter" Sun
Graduated magna cum laude; Phi *Willig Pentathlon Chemistry Prize (co-winner); *Theodore Alexander Saulnier, Jr. Prize; *American Chemical Society, Division of Analytical Chemistry Award; Beta Kappa Honor Society; Pi Mu Epsilon Mathematics Honor Society

Elise Tookmanian
Graduated magna cum laude; *Fred A. Snavely Research Award; *Rawnsley Science Prize; *Annie and Ernest Weibrecht Award; *American Chemical Society, Division of Analytical Chemistry Award (2014); *American Chemical Society, Division of Inorganic Chemistry Award; *American Institute of Chemists Award; Phi Beta Kappa Honor Society

Cole Wisdo
Graduated cum laude

Undergraduate Department Awards

Congratulations to Keira Norford ’18 for her exceptional work in General Chemistry last year. She received a CRC Handbook of Chemistry & Physics and a beaker engraved with her name. Engraved glass beakers were also awarded to the following first year students for their excellent work in both semesters of General Chemistry: Melissa Bollmeyer, Crystal Good, Trexler Hirn, Zachary Kolansky, Hung Nguyen, Ziqin Ni, Cylena Stewart, and Zachary Troiani.
Alumni news

The John and Betty Moore Scholarship

Throughout a 50-year career as a university professor, John Moore ‘61 has demonstrated his strong commitment to students through award-winning classroom teaching and leadership of a broad range of outreach activities. In collaboration with Betty he has pursued a life-long professional interest in chemistry education that was nurtured at F&M. John and Betty coauthored the pioneering textbook Environmental Chemistry (1976) and served as editor and associate editor of the Journal of Chemical Education (1996-2009). John has also written textbooks in chemical kinetics and general chemistry. Together they have participated in curriculum reform projects and in the activities of the Institute for Chemical Education (ICE, http://ice.chem.wisc.edu) and the Chemical Education Digital Library (www.chemeddl.org), both of which distribute instructional materials online. Together, they established the John and Betty Moore Scholarship at F&M in 2012 which was first awarded to Taia Bachman ‘14, who received the scholarship during her junior and senior years. Bachman was a Special Studies major with an emphasis on teaching chemistry.

Here are some thoughts from John and Betty Moore about their scholarship:

Q: Were there experiences at F&M and in the chemistry department that had a substantial impact on your life and career? What was it about F&M Chemistry that you found valuable?

John: Until I took the first-year chemistry course at F&M I had planned to be a physics major. The quality of teaching in the chemistry department helped change my mind. Another factor was that I had a scholarship sponsored by a chemical company (though the scholarship had no requirement that I major in chemistry). Both Fred Snavely and Fred Suydam knew of my interest in becoming a teacher and pointed out that by getting a Ph.D. in chemistry I would be able to pursue that goal. Their personal attention to me as a chemistry student was very helpful. Their examples as effective, dedicated teachers said even more than their advice.

Q: What values do you wish to inspire through your generosity? Are there particular reasons you chose to support F&M chemistry students in the manner in which you did?

John and Betty: We both understand the value of a scholarship in helping a student succeed in college. By providing support for a student who is interested in teaching as a career, we hope to encourage generosity and instill in students a mindset of passing along knowledge so that others can benefit from what has already been learned. Our gift is intended also to encourage students to aspire to the strongest possible academic attainment.

Q: How do you see your gift impacting students?

John and Betty: Our hope is that our gift will provide a student freedom to pursue studies in chemistry without worrying about ability to pay for an F&M education, to enable that student to concentrate on experiencing all that the F&M chemistry department has to offer, and to encourage the recipient to explore all aspects (art, music, literature, other disciplines) of a liberal arts education.

Q: If you could give advice to students today, what would it be?

John and Betty: Because we both work in an academic institution, informal advice to students is second nature. We recommend: be persistent, consider long-term consequences, think holistically—beyond the $—about career choices, seek challenges and work hard to surmount them, and before you graduate explore as much as possible of what a college or university has to offer—both inside and outside the classroom.

From Taia Bachman ‘14

Q: How did the John & Betty Moore Scholarship allow you to pursue your degree at F&M and encourage you to continue on to a career in teaching?

Taia: I simply could not thank John and Betty Moore enough for their generous donation to support my education. Thanks to them, I was able to pursue an education in chemistry at F&M and later become a high school science teacher.

I feel as though I am exceptionally lucky, in that having chosen F&M to receive a degree in chemistry while taking additional secondary education classes, I was able to have a unique one-of-a-kind experience as an up and coming teacher. I was able to be fully engaged in the exceptional liberal arts experience and take part in one of the most exceptional chemistry departments, while pursuing my long-term goal of becoming a future educator. If it weren't for the generous scholarship I received, I never would've been able to thoroughly enjoy my experience and get as much out of it as I did!

I am currently teaching at a charter school in eastern Pennsylvania, where I teach high school science classes, which include physics, chemistry, biology, and anatomy. I feel as though I wouldn't be half the teacher I am today if I hadn't attended F&M College. The Chemistry department laid the foundations that allow me to be so diverse in my teaching of science today and in the many school years ahead!

Samuel O. Grim ’56 - A legacy with a twist

An interesting coincidence occurred when matriculated freshman Anna Hess came to campus this summer to work with Professor Leber. Hess not only was selected as a Moore-Schaeffer Mentorship student, she also was the recipient of the Samuel O. Grim Science and Mathematics Scholarship from her Dallastown high school. This scholarship was established by our alumnus Samuel O. Grim. After completing his B.S. from F&M, Grim received his Ph.D. from MIT in 1960. He is a Professor Emeritus of the University of Maryland, Department of Chemistry and Biochemistry.
Charles Lieber ’81 - One of top 10 World Changers
Harvard University research, led by Dr. Lieber, was listed as one of the 10 Top World Changing Ideas for 2015 in Scientific American’s December 2015 issue. You can read the full article at http://www.scientificamerican.com/article/world-changing-ideas-for-2015/

George Martin ’79 - Donation to Enhance Teaching & Research
The Department was very fortunate to acquire a state-of-the-art Ultra Performance Liquid Chromatography-Quadrupole Time-of-Flight (UPLC-QToF) LC-MS system. Significant funding for the instrument was provided by a generous donation by Dr. George Martin ’79. His donation was leveraged with additional funds from the Eyler endowment for biochemistry, and a generous negotiated discount from Waters Corporation, allowing us to purchase the extremely powerful instrument. The system, a Waters Acquity H UPLC coupled to a Xevo G2-S QToF, will allow exact mass measurements with an accuracy/resolution of ±0.0002 Da, a mass range sufficient to allow the analysis of intact proteins, the ability to perform both electrospray and atmospheric pressure chemical ionization, positive/negative ion analysis, Mass spectrometry/ Mass spectrometry (MS/MS) capabilities, and outstanding detection limits on the order of 100 femtomoles/μL. Very few undergraduate institutions have UPLC-QToF instruments, and the instrument will significantly enhance our teaching and research. Providing our students with the opportunity to gain hands on experience using sophisticated instrumentation greatly adds to their educational experience at F&M, and we are very thankful to Dr. Martin.

Steven H. Strauss ’73 - wins ACS Award
Professor of Chemistry at Colorado State University, Steve Strauss, has been chosen to receive the 2016 ACS Award for Creative Work in Fluorine Chemistry. The presentation of Steve’s award will take place during the 251st National ACS Meeting in San Diego, CA, on Tuesday, March 15, 2016. The award citation will read “For the synthesis and application of highly-fluorinated superweak anions and structural and spectroscopic characterization of perfluoralkylated fullerences and polycyclic aromatic hydrocarbons.” Fluorine chemists worldwide are eligible for this annual award, and it is to Steve’s credit that he is only the fourth U.S. chemist to receive the award in the past ten years. Steve recalls, “My introduction to fluorine chemistry occurred, as a freshman at F&M, when Hugh Heller handed back our first exams and embarrassed me in front of the class by loudly stating "It’s FLUORine, Strauss, not FLOURine!" I never misspelled fluorine again.”

In Memorium
Joseph Banyasz, former F&M faculty
Dr. Joseph L. Banyasz, 73, of Richmond, VA, passed away Nov. 6, 2014. He was originally from Budapest, Hungary and fled with his family during WWII and eventually landed in the USA. He became a citizen and received a Ph.D. in Physical Chemistry from Case Western Reserve University in Cleveland. After a post-doc position in Germany, he began teaching here at F&M in 1973. In 1978 he left to join the Research and Development Department of Altria/Philip Morris USA. He held several patents and his work was well published.

Mark M. Chamberlain ’53
Dr. Chamberlain, 82, a Distinguished Professor of Chemistry Emeritus and former president of Glassboro State College (now Rowan University), in Glassboro, NJ, died on March 29, 2015.

Born in Pawtucket, RI, Chamberlain earned his B.S. in chemistry from F&M and went on to earn his Ph.D. in inorganic chemistry from the University of Illinois, Urbana-Champaign, in 1956.

He began teaching at Western Reserve University, in Cleveland. Later he became vice provost for student affairs, assisting with the merger that created Case Western Reserve University in 1967. Chamberlain then moved to Glassboro State, becoming its president in 1969 at age 38. He successfully steered the college through a time of social and political unrest in the USA, managing to avoid the disturbances that erupted on many other college campuses. He helped to transform Glassboro State from a teachers college to a multipurpose regional institution before resigning from the role of president in 1984. He stayed on as a Distinguished Professor in the department of chemistry and physics at Glassboro State, which became Rowan University. He retired in 2000.

Calvin Henne Long ’56
Dr. Long, 88 passed away on April 28, 2015 in North Carolina. After receiving his B.S. from University of Miami, he arrived at F&M where he received his M.S. Long received his Ph.D. from Stanford University in 1964. He retired from the Kerr McGee Technical Center in Oklahoma City, OK in 1984.
Thank you for your gifts!

Your generous financial support enables Franklin & Marshall and your Chemistry Department to continue to flourish. Your gifts are very important and much appreciated. Contributions were received from the following during the past year:

*Franklin & Marshall Fund in support of Chemistry:* Bonnie Wolfe Bloom ’87 and Ted Bloom; John L. Burmeister, Ph.D. ’59 and D. Aileen Burmeister; Raymond J. Casciari, M.D. ’69 and Colleen Casciari; Mark D. Chilton, M.D. ’76 and Sharon Chilton; Barry Cooper, M.D. ’67 and Lynn Cooper; James P. Duckworth ’49; Katharine Egan ’15; Jay Mark Epstein, D.M.D. ’80, P’11, P’14 and Stephanie J. Simon ’81, P’11, P’14; Charles Faust, Jr., Ph.D. ’64; P. Jeffrey Hay, Ph.D. ’67 and Mary Ann Hay; Pui Shing Ho, Ph.D. ’79 and Margaret Ho; Larry I. Kim, M.D. ’98; Mark J. Kozak, M.D. ’80 and E. Page Kozak; Frederick Killian, Ph.D. ’63 and Ella Killian; David K. Lee, Ph.D. ’04; Mary K. Lisher, Esq. P’09 and John L. Lisher, Esq. P’09; Stephen D. Lockey, IV ’11 and Deanna T. Ross ’12; Jenell M. McCall ’00 and Andrew Joseph McCall; Gregory M. Olenginski ’15; Daner R. Reider, M.D. ’63 and Susan K. Reider; Jean M. Samii W’61; Ted Sauter, M.D. ’80 and Kathie Sauter; Iaroslav A. Savitchouk, Ph.D. ’04; Frederick Schaefer, Ph.D. ’77 and Karen Schaefer; Erika Senska, Esq. ’00 and Robert J. Senska, III, Esq.; David Serxner, Ph.D. ’91 and Carter LaPrade Serxner; Walter Trahanovsky, Ph.D. ’60 and Kathleen Trahanovsky; Andrew B. Turner, Ph.D. ’62; Mark F. Wachter, Esq. ’69 and Virginia Wachter; Cole J. Wisdo ’15; and Bingxin Zhang ’15.

*Endowed Funds benefiting Chemistry:* Richard C. Barth, Ph.D. ’71 and Carol A. Barth; Howard N. Caplan, M.D. ’68 and Jennifer Caplan; Ralph Craig Even ’81 and Kim Brown Even, O.D. ’82; Samuel O. Grim, Ph.D. ’56 and Rebecca A. Allen; Thomas J. Martin, M.D. ’56, P’96 and Lois D. Martin, D. Min. P’96; Eugene P. Mazzola, Ph.D. ’64 and Peggy Mazzola; John W. Moore, Ph.D. ’61 and Elizabeth Moore; Robert B. Pepinsky, Ph.D. ’76 and Laurelee Osborn; Charles D. Schaeffer, Jr., Ph.D. ’70; Debra Salkin Swaim, Ph.D. ’76 and Dr. Robert Swaim; Jane L. Beers Zboray ’76 and James A. Zboray, Esq.; and Honeywell International’s PAC Charitable Gift program, thanks to Dean Rende ’89.

*A special thanks to George Martin ’79, who gave a generous donation which was used to purchase the state-of-the-art Ultra Performance Liquid Chromatography-Quadrupole Time-of-Flight (UPLC-QToF) LC-MS system. (See page 22 for full details).*